THYRISTOR SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURE

Abstract:

In a method of processing a semiconductor device, a silicide-blocking layer may be formed over a semiconductor material. After defining the silicide-blocking layer, impurities may be implanted into portions of the semiconductor material as defined by the silicide-blocking layer. After the implant, silicide may be formed in a surface region of the semiconductor material as permitted by the silicide-blocking layer. Regions of the impurity implant may comprise boundaries that are related to the outline of the silicide formed thereover. In a further embodiment, the implant may define a base region to a thyristor device. The implant may be performed with an angle of incidence to extend portions of the base region beneath a peripheral edge of the blocking mask. Next, an anode-emitter region may be formed using an implant of a substantially orthogonal angle of incidence and self-aligned to the mask. Epitaxial material may then be formed selectively over exposed regions of the semiconductor material as defined by the silicide-blocking mask. Silicide might also be formed after select exposed regions as defined by the silicide-blocking mask. The silicide-blocking mask may thus be used for alignment of implants, and also for defining epitaxial and silicide alignments.